Meridian 1

Transparent Data Networking

Document Number: 553-2731-110
Document Release: Standard 3.00
Date: April 2000

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Revision history

April 2000

Standard 3.00. This is a global document and is up-issued for X11 Release 25.0x. Document changes include removal of: redundant content; references to equipment types except Options 11C, 51C, 61C, and 81C; and references to previous software releases.

December 1994

Standard, release 2.00. Reissued to include technical updates. All updates are noted with revision bars in the margins.

August 1993

Standard, release 1.00. This new document introduces the Transparent Data Networking feature for X11 Release 19 and later.

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Transparent Data Networking

Content list

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Overview

Transparent Data Networking (TDN) allows end-to-end protocol exchange between two data modules that use end-to-end protocols such as T-Link and Public Switched Data Service (PSDS). TDN accesses Tie and DID trunks, so that all types of calls can be tandemed across Meridian 1 switches. The data modules will wait for the circuit path to be established before exchanging protocol parameters. Table 1 shows the data modules and protocols that TDN supports.

TDN also enhances the Electronic Switched Network (ESN5) signaling feature to provide more efficient and economical access between private and public networks. The enhanced ESN is ESN19.

A call is a TDN call if it meets one or more of these criteria:

- An external call that originates or terminates on an MCA/MCU or BRI data module
- A PSDS call
- Uses an end-to-end protocol

Table 1
Modules and protocols that TDN supports

Module	Protocols
Meridian Communications Adapter (MCA) card in a Meridian Modular Telephone (MMT)	PSDS and T-Link on external calls
Meridian Communications Unit (MCU), a stand-alone version of the MCA	PSDS and T-Link on external calls
Basic Rate Interface (BRI) telephone	T-Link, V.110, V.120
High Speed Data Module (HSDM)	PSDS

Operating parameters

Originating and all intermediate nodes must be equipped with the Network Signaling (NSIG) package to use ESN signaling.

MCA, MCU, and BRI (with Data Adapter) modules will generate the ESN19 signaling when using a route configured to support ESN19 or standard signaling.

Any data module that can make a PSDS call will generate the ESN19 or standard signaling when using a route configured to support ESN19.

Data modules that use DM-DM continue to use ESN5 signaling for data networking.

ESN supports private-public and public-private interworking of a PSDS call. It does not support private-public-private network hopping.

ESN19 signaling does not interwork with ESN5 or earlier signaling. ESN19 reverts to ESN5 at ESN5 or earlier nodes.

TDN is not supported on DTI2 or PRI2 trunks.

TDN is supported on the QPC720 only. All references in this module to Digital Trunk Interface (DTI) and Primary Rate Interface (PRI) trunks apply to the QPC720.

Standard transparent data networking (STDN) signaling is not carried over PRI. ESN19 must be used to carry TDN information, or the DSEL value must be set to TDN.

Feature implementation

Procedure 1
Use LD 16 to configure TDN calls or routes (Part 1 of 2)

Prompt	Response	Description
REQ	NEW CHG	Add or change a route
TYPE	RDB	Route data block
CUST	xx	Customer number (0–99)
ROUT	xxx	Route number (0–511)
TKTP	TIE/DID	Trunk type
DTRK	YES	Digital trunk route
DSEL	VOD DTA VCE TDN	Voice or data Data only Voice only Transparent data networking data only
SIGO	STD ESN2 ESN3 ESN5 ETN ESN19	Standard signaling ESN transparent data networking data ***Note:*** SIGO is not prompted if DSEL=TDN or if TKTP=DID

Procedure 1
Use LD 16 to configure TDN calls or routes (Part 2 of 2)

Prompt	Response	Description
STYP		Type of standard signaling. This prompt appears when SIGO-STD is on a DTI route.
	SDAT	Standard signaling for voice and data (DM-DM and non-tandem PSDS)
	STDN	Standard signaling for voice, data, and TDN calls; only valid for DTI trunks.

Procedure 2
Use LD 21 to print the TDN configuration record

Prompt	Response	Description
REQ	PRT	Print configuration
TYPE	RDB	Route data block
CUST	xx	Customer number (0–99)
ROUT	xxx	Route number (0–511)
Note: DSEL is printed for PRI routes when DSEL=TDN. DSEL is not printed for PRI if it is set to any other value.		

Feature operation

To establish and use a transparent data channel, the TDN feature introduces a new data type, TDN, a new signaling arrangement, ESN19, and a new standard signaling type, STDN. All are configured in LD16.

TDN provides a transparent data channel for private network calls and for calls that terminate or originate in a public network. The terminating side can be the next logical node or at the end of several nodes tandemed by T1 links.

Any data call that remains within the private network is identified as a TDN call type. It travels along Tie routes configured for ESN19 signaling.

A non-DM-DM data call that hops onto or off the public network uses a TDN route. A TDN route is a DID trunk that is configured to use standard transparent data networking (STDN) signaling.

For a call over a combination of DTI/PRI and DTI2/PRI2 trunks, only non-DM-DM protocols should be used. Recommended protocols include T-Link, PSDS, V.110, and V.120. QMT21, MCA, and MCU support PSDS. The MCA, MCU, and some BRI sets support T-Link. Some BRI sets use V.110 or V.120, or both.

The user can dial a network access code or a route access code. If you dial a network access code, ESN19 inserts the TDN call signaling to convey the type of call to the network signaling. The route access code specifies a route configured for DSEL set to DTA, VOD, or TDN.

An originating call that is not classified as TDN will be blocked from taking a TDN route. A call can go from a TDN route to a VOD or DTA route; but if the VOD/DTA route uses ESN19 signaling, the TDN call will lack valid protocol information.

Table 2 shows the results of incoming and outgoing TDN calls on Tie and DID trunks, according to the DSEL values.

Table 2
Results of TDN calls according to trunk types and DSEL values

DSEL	TDN incoming and outgoing Tie trunk	Incoming and outgoing DID trunk
VCE	N/A	Blocked
DTA	TDN call	Blocked
VOD	TDN call	TDN call
TDN	TDN call	TDN call

The following circumstances can cause TDN to fail:

Incompatible data module setup. For a PSDS call, the users are responsible for ensuring that the data parameters on the originating and terminating data modules correspond.

Route incorrectly configured for ESN19 signaling. If a PSDS call selects a Tie trunk with a VOD route not configured to support TDN signaling, the switch will try to convert the protocol if both trunks in the tandem node are DTI trunks. The data may be corrupted. If at least one of the trunks in the tandem node is a PRI trunk, the call will tandem successfully through the switch. However, an ESN19 DTI TDN CALL message will not be created.

Incompatible ESN. For example, if a Meridian 1 network has X11 release 18 switches or above and is all PRI, TDN calls will successfully tandem through the switches. If the network is not all PRI, or includes Meridian 1 switches with X11 release 18 or below, the call going from the X11 release 19 switch using TDN signaling or a TDN route to the ESN 2/3/5 is blocked. A call going from ESN 1/3/5 to X11 release 19 will be completed if there is at least one trunk whose DSEL is either DTA or VOD.

TDN call type with no ESN19 or TDN routes in the Route List Block (RLB). This call is blocked. No speech path is created and overflow results.

Tandem TDN or DTA call type using an ACOD of VCE route over PRI or ISL. This call is blocked.

Tandem VCE call type using an ACOD of DTA, or TDN route over PRI or ISL. This call is blocked.

TDN call type with ACOD of ESN5 route. The call is placed on the ESN5 route. If the call is over a Tie trunk and the call terminates on the next switch, the call will be successful if the parameters on both the originating and terminating data modules correspond. If the call tandems through a subsequent switch, it may be completed; but the data may be corrupted. If the call is a PSDS call, disconnect procedures may not be initiated until the data transfer from one unit to the other is completed.

Receive overflow tone or call does not connect when making a TDN call using standard signaling. Verify that the STYP value in LD16 is set to STDN on all DTI trunks used for the call.

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